EXHIBIT W

A Survey of Dispensing and Acquisition Costs of Pharmaceuticals in the State of Louisiana

Prepared for the
[redacted] Department of Health and Hospitals
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Chapter
3

Dispensing Cost Survey

The two primary components for reimbursement of pharmaceuticals are drug ingredient cost and the dispensing fee. The dispensing, or professional, fee is paid to pharmacies to cover their overhead and labor costs. Federal regulations at 42 CFR 447.331-333 require states to establish a reasonable dispensing fee and to document their pharmacy reimbursement methodology in their state plan. Dispensing fees for Medicaid programs have typically been based on an analysis of costs incurred by pharmacies within the state and tend to vary somewhat from state to state. In order to determine dispensing costs incurred to dispense pharmaceuticals to Medicaid recipients in the state of Louisiana, Myers and Stauffer utilized a survey method consistent with the methodology in the Louisiana Medicaid State Plan. This method is similar to the approach which Myers and Stauffer has used as the basis for analysis of dispensing cost in over a dozen states.

Methodology of the Survey

Survey Population

The Louisiana Department of Health provided Myers and Stauffer with a list of pharmacy providers currently enrolled in the Medicaid program. Of the 1,123 pharmacies receiving cost surveys, 622 were independent pharmacies and 501 were chain pharmacies.

Mailing Procedures

Survey forms were mailed on February 11, 1999, to pharmacy providers currently enrolled in the Medicaid program. Each pharmacy received a copy of the cost survey (Exhibit 1), a list of instructions (Exhibit 2), a letter of explanation from Myers and Stauffer (Exhibits 3 and 4), a letter of introduction from the State of Louisiana (Exhibit 5), and a business reply envelope.

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Survey Participation

Of the 1,123 surveyed pharmacies, 70 pharmacies were determined to be ineligible to participate. Providers were deemed ineligible if they had closed their pharmacy, had a change of ownership, had dispensed less than 500 Medicaid prescriptions, or had less than six months of cost data available.

Concerted efforts to encourage maximum participation were made by various parties concerned with the success of the survey. An official letter (Exhibit 5) explaining the purpose of the study was sent to the sampled pharmacy providers by the Louisiana Department of Health and Hospitals. This letter indicated that participation was mandatory and non-response was grounds for termination from the Medicaid program. The cost survey forms and instructions and a letter of explanation from Myers and Stauffer (Exhibit 3) offered pharmacy owners the option of having Myers and Stauffer complete certain sections of the survey form if copies of financial statements and/or tax returns were supplied. A toll-free telephone number was listed on the survey form, and pharmacists were urged to call to resolve any questions they had concerning completion of the survey form. An additional letter from the Louisiana Pharmacists Association (Exhibit 6) was sent encouraging participation in the survey.

The survey forms were accompanied by a flyer announcing a series of informational meetings that were held in nine locations across Louisiana (see Exhibit 7). A presentation explaining the dispensing cost survey forms was included in the meetings. Pharmacy owners and managers had the opportunity to meet with Department and Myers and Stauffer representatives and ask questions about the survey process.

By the original filing deadline of March 15, 1999, 484 cost surveys had been received. All pharmacies that had not responded by that deadline were sent a letter extending the original deadline to March 29, 1999 (Exhibit 8).

By March 29, 703 pharmacies had submitted cost surveys. In order to maximize the response rate, 340 additional cost surveys were accepted after the extended deadline.

Selection of Random Sample

After the survey collection process, a sample of cost surveys were chosen for review and analysis. In order to be used in the analysis, cost surveys were subjected to an intensive review process. Time constraints for the project made the use of all cost surveys impractical. Accordingly, a random sample of approximately 425 cost surveys was selected for the review process. As the selection process was entirely random and the sample size relatively large, the random sample was representative of the Louisiana Medicaid provider population.

Many of the submitted cost surveys contained errors or were incomplete. For cost surveys with such errors or omissions, the pharmacy was contacted for clarification. There were some cases in which issues on the cost survey were not resolved in time for inclusion in the final analysis. Ultimately, 405 surveys were entered into a database and used in the analysis of dispensing costs.

The following table, 3.1, summarizes the cost survey response rate.

Table 3.1 Pharmacies Responding to Cost Survey

Type of Pharmacies	Total Medicaid Participating Pharmacies	Pharmacies Exempt from Filing	Eligible Pharmacies	Cost Surveys Received	Response Rate	Pharmacies Sampled
Chain	501	12	489	484	99%	207
Independent	622	58	564	489	87%	198
TOTAL	1,123	70	1,053	973	92%	405

Reporting Bias

Due to the mandatory nature of the dispensing cost survey, there is minimal risk of any reporting bias. A pharmacy's decision to file was not the result of any preconceived notion that its costs were high or low, but rather a function of the requirement imposed by the Department of Health and Hospitals.

Receipt and Review Procedures

For confidentiality purposes, each pharmacy was randomly assigned a four-digit identification number and each cost survey in the sample was carefully examined. This review identified cost surveys considered incomplete, and pharmacies submitting these cost surveys were sent a "Request for Additional Information" letter specifying the information necessary for completion (Exhibit 9). Those pharmacies not responding to the request for additional information were sent a second request for additional information. Pharmacies not responding to this second request for additional information were contacted by telephone.

Field Examination Procedures

Twenty pharmacies in the random sample were selected for a field examination. The selection was primarily random, but geographic location was taken into consideration. A letter was sent to each selected pharmacy explaining the selection process, the time period during which the field examination would take place, and the necessary data to have available. Each pharmacy was then contacted by telephone for further explanation of the field examination and confirmation of the time and date. An examination file was prepared for each of

the 20 pharmacies containing a uniform field examination program (Exhibit 10), a copy of the completed reviewed cost survey, and other necessary work papers. Field examinations were conducted during the period June 2 through June 11, 1999.

Following the actual visit to the pharmacy, the work papers were completed by making a second examination of each file to ensure that all necessary information had been obtained. A follow-up letter was sent to each pharmacy visited, expressing appreciation for the time and cooperation of pharmacy personnel. Each work paper file was reviewed for quality assurance. Results of the 20 field examinations showed no significant bias in overstating or understating costs reported on the cost survey (Exhibit 11).

Cost Finding Procedures

Cost finding is the process of recasting cost data using rules or formulas in order to accomplish an objective. In this study, the objective is to estimate the cost of dispensing prescriptions to Medicaid recipients. To accomplish this objective, some pharmacy costs must be allocated between the prescription dispensing function and other business activities. This process identified the reasonable and allowable costs necessary for prescription dispensing to Medicaid recipients.

Most pharmacies are also engaged in lines of business other than the dispensing of prescription drugs. For example, many pharmacies have a retail business with sales of over-the-counter (OTC) drugs and other non-medical items. Some pharmacies are involved in the sale of durable medical equipment. The existence of these other lines of business necessitate that procedures be taken to isolate the costs involved in the prescription dispensing function of the pharmacy.

Dispensing cost consists of two components: overhead and labor. The cost finding rules employed to determine each of these components are described in the following sections.

Overhead Costs

Overhead cost per prescription was calculated by summing the allocated overhead of each pharmacy and dividing this sum by the number of prescriptions dispensed. Overhead expenses originally reported for the entire pharmacy were allocated to the prescription department based on either:

- The sales ratio (prescription sales / total sales),
- The area ratio (prescription department floor space (in square feet) / total floor space),
- All (100%), or
- None.

Overhead costs that were considered *entirely prescription-related* include:

- Prescription department fees.
- Dues and publications.
- Prescription delivery expense.
- Prescription computer expense.
- Prescription containers and labels. (For many pharmacies the costs associated with prescription containers is captured in their cost of goods. Subsequently, it was often the case that a pharmacy was unable to report expenses for prescription containers. In order to maintain consistency, a standardized allowance for prescription containers was determined in conjunction with a consultant pharmacist. See Exhibit 12.)
- Certain other expenses that were separately identified on lines 27-29[2] (see the cost survey in Exhibit 1).

Overhead costs that were *not allocated as a prescription expense* include:

- Income taxes[3].
- Bad debts[4].
- Advertising.
- Contributions[5].

Certain costs reported on Lines 27, 28, and 29 were occasionally excluded. An example is freight expense, which usually relates only to nonprescription purchases or cost of goods sold.

The remainder of the costs was assumed to be related to *both prescription and nonprescription sales*. Joint cost allocation is necessary to avoid understating or overstating the cost of filling a prescription.

[2] Expenses that were considered entirely prescription-related were transferred to Lines16 or 28. One example is continuing professional education for a pharmacist.

[3] Income taxes are not considered an operational cost because they are based upon the profit of the pharmacy operation. Although a separate line was provided for the state income taxes of corporate filers, it was not allowed as a prescription cost in order to afford equal treatment to each pharmacy, regardless of the type of ownership.

[4] Bad debts were not considered a prescription-related expense since they are revenue offsets arising through an accrual recognition of revenues which are later found to be not collectible. Disallowing this expense also afforded equal treatment to providers, irrespective of their method of accounting.

[5] Individual proprietors and partners are not allowed to deduct contributions as a business expense for federal income tax purposes. Any contributions made by their business are deducted along with personal contributions as itemized deductions. However, corporations are allowed to deduct contributions as a business expense for federal income tax purposes. Thus, while Line 19 on the cost report recorded the business contributions of a corporation, none of these costs were allocated as a prescription expense. This, again, afforded equal treatment for each type of ownership.

Those overhead costs allocated on the ratio of the *floor space* (as previously defined) include:

- Depreciation.
- Real estate taxes.
- Rent.
- Repairs.
- Utilities.

The costs in these categories were considered a function of floor space. For example, the larger the facility, the higher the rent, if other factors are considered equal. The floor space ratio was increased by 50 percent from that reported on the original cost survey to allow for waiting area for patients and prescription department office area. The resulting ratio was adjusted downward, when necessary, not to exceed the sales ratio (in order to avoid allocating 100% of these costs in the rare instance where the prescription department occupies the majority of the area of the store).

Overhead costs allocated using the *sales ratio* include:

- Personal property taxes.
- Other taxes.
- Insurance.
- Interest.
- Accounting and legal fees.
- Telephone and supplies.

Labor Costs

Labor costs are calculated by allocating total salaries, payroll taxes, and benefits based on the percent of time spent in the prescription department. The allocations for each labor category were summed and then divided by the number of prescriptions dispensed to calculate labor cost per prescription. There are various classifications of salaries and wages requested on the cost survey (Lines 31-44) due to the different cost treatment given to each labor classification.

The total salaries, payroll taxes, and benefits of employee pharmacists (Lines 34-38) were multiplied by a factor based upon the percent of prescription time. Although some employee pharmacists spent a portion of their time performing nonprescription duties, it was assumed that their economic productivity when performing nonprescription functions was less than their productivity when performing prescription duties. Therefore, a higher percentage of salaries, payroll

taxes, and benefits was allocated to prescription labor costs than would have been if a simple percent of time allocation was utilized. Specifically, the percent of prescription time indicated was multiplied by two and divided by the percent of prescription time plus one.

> ***An Example:***
>
> An employee pharmacist spends 90 percent of their time in the prescription department. The 90 percent factor would be modified to 95 percent:
>
> $$\frac{(2)(.9)}{(1+.9)}$$
>
> Thus, 95 percent of the reported salaries, payroll taxes, and benefits would be allocated to the prescription department. It should be noted that most employee pharmacists spent 100 percent of their time in the prescription department.

The allocation of salaries, payroll taxes, and benefits for all other prescription employees (Lines 39-43) was based directly upon the percentage of time spent in the prescription department as indicated on the individual cost survey. For example, if the reported percentage of prescription time was 75 percent and total salaries were $10,000, then the allocated prescription cost would be $7,500.

Owner Compensation Issues

The allocation of salaries, payroll taxes, and benefits of the owner pharmacists (Lines 31-33) was based upon the same modified percentage as that used for employee pharmacists. However, limitations were placed upon the allocated salaries, payroll taxes, and benefits of owner pharmacists. Since amounts shown for owner pharmacists are not historical costs that have arisen from arm's length negotiations, they are not similar to other costs. A pharmacy owner has a different attitude toward other expenses than toward his/her own salary. In fact, owners often pay themselves above the market costs of securing the services of an employee pharmacist. This excess effectively represents a withdrawal of business profits, not a cost of dispensing. Some owners may underpay themselves for business reasons, which would also misrepresent the true dispensing cost.

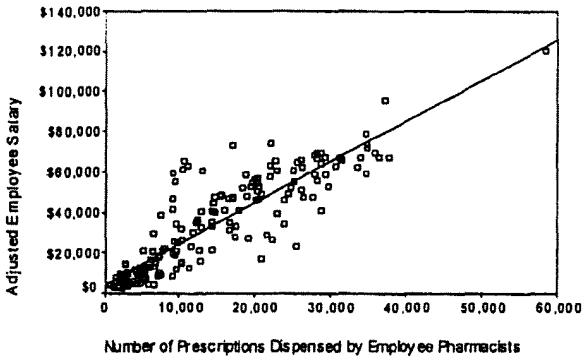
Another factor considered in determining the allocation of owner's salaries was the variability in productivity. For example, one owner pharmacist may dispense 30,000 prescriptions per year while another may dispense 5,000. Those owner pharmacists who dispensed a greater number of prescriptions were allowed a higher salary than were owner pharmacists who dispensed a smaller number of prescriptions. Since variance is not nearly as great with respect to employee pharmacists, the owner pharmacist's salary was subjected to limits based upon employee pharmacists' salaries per prescription.

Determining Owner Compensation Allowances

To estimate the cost that would have been incurred had an employee been hired to perform the prescription-related functions actually performed by the owner, a bivariate plot technique was used. A bivariate plot shows the correlation between an independent (predictor) variable and a dependent (predicted) variable. The upper and lower limits on owner pharmacist salary were determined from a bivariate regression (Chart 3.1)[6]. The resulting regression equation to predict pharmacist labor cost at varying amounts of work performed is:

Chart 3.1 Employee Pharmacist Salaries

Independent Pharmacies



Labor cost = $2.033 X (number of prescriptions dispensed) + $4,072

This equation was used as a lower limit for allocating owner pharmacist costs. Adding one standard deviation ($10,981) to the above equation set the upper limit. An additional constraint is a $73,217 maximum annual salary. This amount was set at the 75th percentile of annual salary for full time employee pharmacists at independent pharmacies. Thus, the amount of owner's salary allocated to prescription costs was limited to $2.033 times the number of prescriptions dispensed by the owner[7] plus $15,053, not to exceed $73,217.

There is no reason to believe that managerial or clerical duties performed by the nonpharmacist owners were more valuable to the prescription dispensing function than for other functions. As with other owners, the amount shown for salaries, payroll taxes, and benefits was not a result of arm's length negotiations. Therefore, an upper limit of $20,000 and a lower limit of $10,000 were placed upon these prescription costs. These limits were chosen based on experience in prior surveys. No adjustment was made to the percentage of prescription time factor for owner nonpharmacists (Lines 31-33).

[6] Employee pharmacist salary per prescription was used to set limitations on owner pharmacist salary estimates due to the "arm's length" nature and lack of variance in employee productivity compared with owner productivity.

[7] The number of prescriptions filled by the owner pharmacist was determined by multiplying the percent of owner-filled prescriptions (Lines 31-33 of the cost report) by the total number of prescriptions dispensed (Line k).

Overall Labor Cost Constraints

An overall constraint was placed on the proportion of total reported labor that could be allocated as prescription labor. The constraint assumes that a functional relationship exists between the proportion of allocated prescription labor to total labor **and** the proportion of prescription sales to total sales. It is also assumed that a higher input of labor costs is necessary to generate prescription sales than nonprescription sales, within limits.

The parameters of the applied labor constraint are based upon an examination of data submitted by all pharmacies. These parameters are set in such a way that any resulting adjustment affects only those pharmacies with a percentage of prescription labor deemed unreasonable. For instance, the constraint would come into play for an operation that reported 75 percent pharmacy sales and 100 percent pharmacy labor (obviously, some labor must be devoted to generating the 25 percent nonprescription sales).

To determine the maximum percentage of total labor allowed, the following calculation was made:

$$\frac{0.3(\text{Sales Ratio})}{0.1+(0.2)(\text{Sales Ratio})}$$

Inflation Factors

All allocated costs for overhead and labor were totaled and multiplied by an inflation factor. Inflation factors are intended to reflect cost changes from the middle of the reporting period of a particular pharmacy to a common fiscal period ending June 30, 1999. As specified in the Louisiana Medicaid State Plan, the midpoint and terminal month indices used were taken from the U. S. Government Consumer Price Index (CPI), Southern Region, Urban Consumer (see Exhibit 13).

The use of inflation factors is necessary in order for pharmacy cost data from various fiscal years to be compared uniformly. Recent experience with pharmacy cost studies has indicated that the CPI may tend to overstate increases in dispensing cost over an extended time. This appears to be the result of increased cost containment pressures exerted on retail pharmacies by reduced reimbursement from managed care entities.

Analysis and Findings

The dispensing costs for all pharmacies in the sample are summarized in the tables and paragraphs following. We present the findings for all pharmacies in the sample collectively, and also for subsets of the sample based on pharmacy characteristics.

There are several statistical measurements that may be used to express the central tendency of a distribution, the most common of which are the average, or mean, and the median (see sidebar). Our findings are presented in the forms of means and medians, both raw and weighted.

In many real world settings such as this dispensing cost survey, statistical "outliers" are a common occurrence. These outlier pharmacies have dispensing costs that are not typical of the majority of pharmacies. Medians are often preferred to averages in situations where the magnitude of outlier values results in an arithmetic average that does not represent what we think of as "average" or normal in the common sense. The measurement that is the most ideally suited for determining the typical cost of dispensing prescriptions to Medicaid recipients is the **median weighted by Medicaid volume**.

For all pharmacies in the sample, our findings are presented in Table 3.2.

Different Measures of Central Tendency:

Unweighted mean: simply the average cost for each pharmacy.

Weighted mean: the average cost of all prescriptions dispensed by pharmacies included in the sample, weighted by prescription volume. This implies that low volume pharmacies have a smaller impact on the weighted average than high volume pharmacies. This approach, in effect, sums all costs in the sample and divides that sum by the total of all prescriptions in the sample. The weighting factor can be either total prescription volume or Medicaid prescription volume.

Median: the value that divides a set of observations (such as dispensing cost) in half. In the case of this survey, the median is the dispensing cost such that the cost of one half of the pharmacies in the set are less than or equal to the median and the dispensing costs of the other half are greater than or equal to the median.

Weighted Median: This is determined by finding the pharmacy observation that encompasses the middle value prescription. The implication is that one half of the prescriptions were dispensed at a cost of the weighted median or less, and one half were dispensed at the cost of the weighted median or more.

For example, there were 4,205,203 Medicaid prescriptions dispensed by the 405 pharmacies in the sample. If the pharmacies were arrayed in order of dispensing cost, the median weighted by Medicaid volume, is the dispensing cost of the pharmacy the dispensed the middle, or 2,102,602nd prescription.

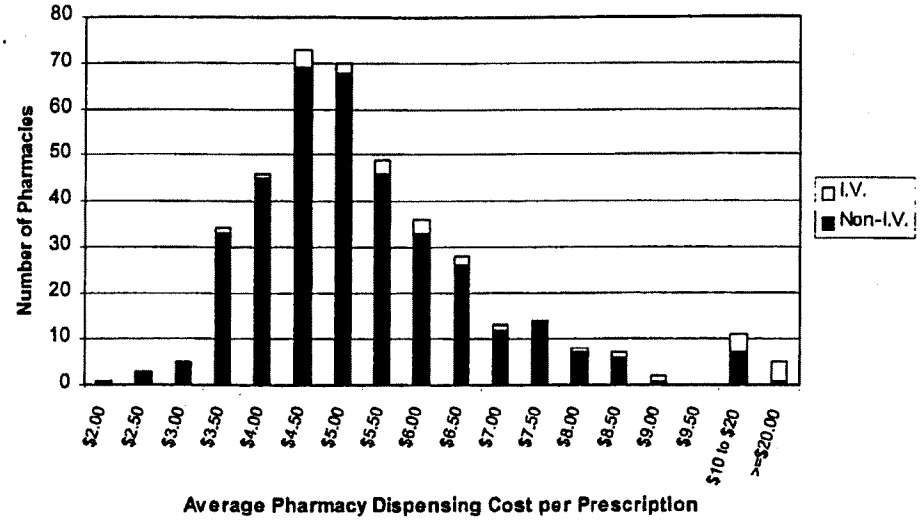
Table 3.2 Cost Per Prescription – All Pharmacies

	Dispensing Cost
Median Weighted by Medicaid Volume	$5.15
Median Weighted by Total Volume	$5.07
Median	$5.28
Unweighted Mean	$6.45
Mean Weighted by Medicaid Volume	$5.52
Mean Weighted by Total Volume	$5.39

(Dispensing Costs have been inflated to the common point of June 30, 1999)

Chart 3.1 is a histogram of the dispensing cost for all pharmacies in the sample. There was a large disparity between the highest, $152.55, and lowest, $2.18, dispensing cost observed for pharmacies in the sample. The majority of pharmacies (238), however, had dispensing costs in the range of $4.00 to $6.00.

Chart 3.3 Dispensing Cost by Pharmacy
All Pharmacies in Sample



The most significant characteristic which affected pharmacy dispensing cost was the provision of intravenous (I.V.) solutions. Our analysis revealed significantly higher costs of dispensing is associated with the 28 pharmacies in the sample that provided this service.

In every pharmacy dispensing study where information on I.V. solution dispensing activity has been collected by Myers and Stauffer, such activity has been found to be associated with higher dispensing costs. Discussions with pharmacists providing I.V. solutions indicate that the activities and costs involved in filling I.V. prescriptions are significantly different from the costs incurred by the typical retail (or long term care) pharmacy. The reasons for this difference include:

- costs of special equipment for mixing and storage of I.V. solutions;
- higher direct labor costs because most I.V. prescriptions must be mixed in the pharmacy, whereas the manual activities to fill a non-I.V. prescription are mainly limited to counting pills (or vials, etc.) and printing and affixing the label; and
- a pharmacy may mix and deliver many "dispensings" of a daily I.V. solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions.

This latter factor, in particular, can have a dramatic impact on increasing a pharmacy's apparent cost per prescription.

The differences in dispensing costs which were observed for providers of I.V. services compared to those pharmacies which did not offer I.V. services are summarized in Table 3.3.

Table 3.3 Cost Per Prescription - I.V. Versus non I.V. Pharmacies

Type of Pharmacy	Number of Pharmacies	Unweighted Mean Total Cost	Standard Deviation	Mean Total Cost Weighted by Total Volume
Pharmacies Dispensing I.V. Prescriptions	28	$18.57	$32.86	$8.97
Pharmacies Not Dispensing I.V. Prescriptions	377	$5.55	$1.76	$5.14

(Dispensing Costs have been inflated to the common point of June 30, 1999)

Based on our cost findings, it must be concluded that the costs incurred to dispense I.V. prescriptions are not representative of the costs incurred by a general pharmacy. If the costs of I.V. services were to be included in the computation of an average or median dispensing cost that was then used to establish a reimbursement rate, the effect would be to pay approximately 93% of pharmacies an additional allowance for a service they never provided. And, for those pharmacies providing I.V. services, the marginal increase in the fee would be immaterial in relation to the cost of actually dispensing an I.V. prescription.[8] Consequently, many of the analyses which follow,exclude these providers which had dispensed I.V. prescriptions. Table 3.4 restates some of the measurements noted in Table 3.2 excluding pharmacies that dispensed I.V. prescriptions.

Table 3.4 Cost Per Prescription – Excluding I.V. Pharmacies

	Dispensing Cost
Median Weighted by Medicaid Volume	$5.07
Median Weighted by Total Volume	$5.03
Median	$5.23
Raw Mean	$5.55
Mean Weighted by Medicaid Volume	$5.19
Mean Weighted by Total Volume	$5.14

(Dispensing Costs have been inflated to the common point of June 30, 1999)

[8] Although typical dispensing fees reimburse less than the dispensing costs of I.V. pharmacies, they are generally able to break even based on the margin allowed on ingredient cost reimbursement.

Analysis of Pharmacy Characteristics

Responding pharmacies were categorized into various groups of interest and their dispensing costs analyzed to determine statistical significance. These characteristics include:

- Chain versus independent pharmacy affiliation.
- Urban versus rural pharmacy location.
- Type of pharmacy ownership.
- Total prescription volume.
- Total Medicaid volume.
- Medicaid volume as a percent of total volume.
- Provision of unit dose dispensing services.

For reasons previously described, these analyses are limited to those pharmacies that did not provide I.V. services. All costs referred to in these analyses have been inflation adjusted to the common point of June 30, 1999.

One way to determine the statistical significance of differences in dispensing cost between the pharmacies classified by the above referenced characteristics is through the use of a *t*-test. The sample data may show that a certain group of pharmacies has a sample mean lower or higher than another group. Recognizing that the data only represents a sample, a *t*-test is a statistical technique that seeks to determine if the findings are strong enough that a similar relationship can be expected to exist for the entire population. The *t*-test takes into consideration the sample's size, mean, and underlying variance.

1) Chain Versus Independent Pharmacy Affiliation

Of the 377 pharmacies in the sample that did not dispense I.V. prescriptions, 170 were independent pharmacies and 207 were chain pharmacies.

Table 3.5 Chain Versus Independent Pharmacies

Type of Pharmacy	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost	Median Weighted by Medicaid Volume
Independent	170	$5.45	$2.11	$5.08
Chain	207	$5.64	$1.41	$5.03

The use of a *t*-test indicates that the difference in the raw means is not statistically significant (at the 5% level of significance). This means that there is insufficient evidence in the *sample* data to support the contention that there is a chain versus

independent dispensing cost differential for the population of *all* chain and independent pharmacies.

2) Urban Versus Rural Pharmacy Location

Myers and Stauffer used the zip code of each pharmacy to determine if it was located in a Metropolitan Statistical Area (MSA) as used by the federal Health Care Finance Administration (HCFA). Those in an MSA were considered to be urban, and those not in an MSA were considered rural.

Table 3.6 Urban Versus Rural Pharmacy Location

Location of Pharmacy	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost	Median Weighted by Medicaid Volume
Urban	263	$5.59	$1.76	$5.17
Rural	114	$5.47	$1.77	$4.92

Again, the use of a *t*-test indicates that the difference in the raw means is not statistically significant (at the 5% level of significance).

As an additional analysis of pharmacy dispensing cost by location, pharmacies were grouped by Medicaid region.

Table 3.7 Dispensing Costs by Medicaid Region

Location of Pharmacy (Medicaid Region)	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost
Region I, New Orleans	72	$5.84	$1.95
Region II, Baton Rouge	45	$5.69	$2.66
Region III, Thibodaux	32	$5.67	$1.87
Region IV, Lafayette	61	$5.43	$1.22
Region V, Lake Charles	30	$5.46	$1.01
Region VI, Alexandria	32	$5.34	$2.03
Region VII, Shreveport	37	$5.47	$1.16
Region VIII, Monroe	36	$5.74	$1.65
Region IX, Mandeville	30	$5.04	$1.52
Out of State	2	$4.94	$0.03

Some of the differences observed in the regional breakdown of dispensing cost are statistically significant (at the 5% level of significance). For example the two extremes, Region I, New Orleans, and Region IX, Mandeville, have a statistically significant difference in dispensing costs. Other differences, such as between the New Orleans and Baton Rouge regions, are not significant.

3) Type of Pharmacy Ownership

Pharmacies reported their ownership as being

- sole proprietor,
- partnership, or
- corporation.

Table 3.8 Pharmacy Ownership

Ownership Structure of Pharmacy	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost
Sole Proprietor	38	$5.25	$1.26
Partnership	54	$5.19	$0.99
Corporation	283	$5.61	$1.81

The majority, 75%, of pharmacies had a corporate business structure. Differences in dispensing costs among these types of ownership structures were not statistically significant (at the 5% level of significance).

4) Total Prescription Volume

Pharmacies were classified into meaningful groups based upon their differences in total prescription volume. Dispensing costs were then analyzed based upon these volume classifications.

Table 3.9 Pharmacy Total Annual Prescription Volume

Total Annual Prescription Volume of Pharmacy	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost
0 to 14,999	37	$7.69	$3.29
15,000 to 24,999	82	$6.09	$1.57
25,000 to 49,999	124	$5.25	$1.30
50,000 to 79,999	78	$4.91	$0.93
80,000 and Higher	56	$4.94	$0.91

There is a significant correlation between a pharmacy's total prescription volume and the dispensing cost per prescription. For all categories noted above, with the exception of the two highest volume categories, differences in the mean dispensing cost were statistically significant (at the 5% level of significance). This result is not surprising because many of the costs associated with any business, included the dispensing of prescriptions, are fixed in nature, and do not vary significantly with increased volume. For stores with a higher total prescription volume, these fixed costs are spread over a greater number of prescriptions resulting in lower costs per prescription.

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5) Total Medicaid Volume

Pharmacies were also classified based upon their Medicaid volume. Medicaid volume for calendar year 1998 was supplied to Myers and Stauffer by the Department's fiscal agent, UNISYS.

Table 3.10 Pharmacy Annual Medicaid Prescription Volume

Annual Medicaid Prescription Volume of Pharmacy	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost
0 to 2,999	76	$6.48	$2.58
3,000 to 14,999	228	$5.50	$1.43
15,000 and Higher	73	$4.76	$1.13

Again, for all of the classifications shown, the differences in the mean dispensing cost were found to be statistically significant (at the 5% level of significance). It should be noted, however, that there is a correlation between Medicaid volume and total prescription volume. The relationship noted with regard to Medicaid volume, is a function of total prescription volume rather than Medicaid volume alone.

6) Medicaid Volume as a Percent of Total Volume

A better measure of the effect of a provider's Medicaid volume was to use Medicaid volume as a percent of total volume. To facilitate this analysis, pharmacies were arrayed into meaningful classifications of Medicaid utilization.

Table 3.11 Pharmacy Medicaid Utilization Ratio

Medicaid Prescription Volume as a Percent of Total Volume	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost
0.0% to 9.9%	100	$5.59	$1.60
10.0% to 39.9%	195	$5.40	$1.40
40.0% and Higher	82	$5.75	$2.56

The differences in the sample means observed here were not statistically significant. This important result indicates that the sample data does not support the contention that there are higher or lower costs associated with a pharmacy's Medicaid utilization.

7) Provision of Unit Dose Dispensing Services

Pharmacies were classified by whether or not they provided prescription drugs in unit dose packaging.

Table 3.12 Provision of Unit Dose Prescription Services

Type of Pharmacy	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost	Mean Weighted by Total Volume	Mean Weighted by Medicaid Volume
Provides Unit Dose Services	135	$5.27	$1.44	$5.12	$5.20
Does Not Provide Unit Dose Services	242	$5.71	$1.91	$5.15	$5.18

Without further analysis, the results shown in Table 3.12 indicate that there is a significantly higher dispensing cost associated with pharmacies that do *not* dispense unit dose prescriptions. However, as the weighted means suggest, the raw means are somewhat skewed by providers with relatively low volumes. A more reasonable conclusion would be that the provision of unit dose dispensing services does not produce a significant differential in dispensing costs.

The analyses described above tested for significance differences in cost by analyzing one pharmacy attribute at a time. A more sophisticated method to analyze the impact of pharmacy characteristics upon dispensing cost is to use a multivariate regression analysis. In such an analysis, it is possible to control for factors known to affect dispensing cost, such as total prescription volume, and determine if other factors have a significant impact dispensing cost. It is possible for an attribute to be not statistically significant in a *t*-test, but still be shown to have some effect on dispensing cost in a multivariate analysis. For further discussion of the multivariate analyses performed on the dispensing cost data, see Appendix A.

Components of Cost

Information on prescription dispensing cost was collected on the cost survey in individual expense categories. We analyzed the various components of the average dispensing cost for the pharmacies in the sample. Table 3.13 and Charts 3.2 and 3.3 display the various cost components of the mean costs for pharmacies in the sample. Mean costs were weighted by total prescription volume, and for this presentation pharmacies dispensing I.V. prescriptions were excluded.

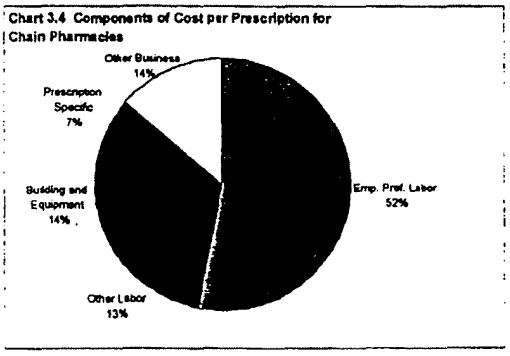
Expenses were classified as follows:

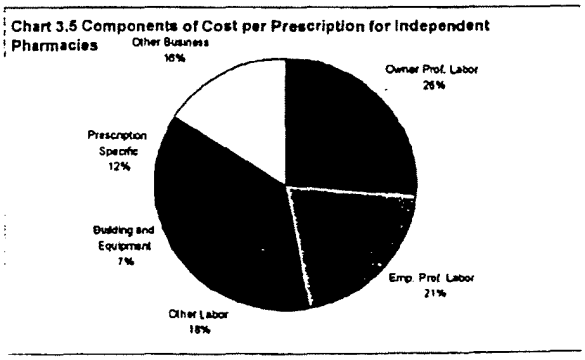
- Owner professional labor – owner's labor costs were subject to constraints in recognition of its special circumstances as previously noted.
- Employee professional labor consists of employee pharmacists.

- Other labor includes the cost of delivery persons, interns, technicians, clerks and any other employee with time spent performing the prescription function of the pharmacy.
- Building and equipment expense includes depreciation, rent, ownership costs, repairs, utilities and any other expenses related to building and equipment.
- Prescription-specific expense includes pharmacist-related dues and subscriptions, prescription containers and labels, prescription-specific computer expenses, continuing education, prescription fees[9], and any other expenses that are unique to the prescription dispensing business.
- Other business expenses consists of all other expenses that were allocated to the prescription dispensing function of the pharmacy including interest, insurance, telephone, and legal and professional fees.

Table 3.13 Components of Prescription Dispensing Cost

Type of Expense	Chain Pharmacies	Independent Pharmacies
Owner Professional Labor	$0.00	$1.32
Employee Professional Labor	$2.78	$1.02
Other Labor	$0.69	$0.89
Building and Equipment	$0.71	$0.37
Prescription Specific Expenses	$0.35	$0.57
Other Business Expenses	$0.71	$0.79
Total	**$5.23**	**$4.97**





[9] The Department of Health and Hospitals levies a $0.10 per prescription fee on Louisiana pharmacies. Some pharmacies reported the fee on the cost survey as an expense to the pharmacy. Others treated the prescription fee similar to sales tax, an expense passed on to the consumer, and consequently not an expense to the pharmacy. In some cases, it was difficult to determine if the pharmacy had included or excluded the expense related to this fee. As far as it was possible to do so, the survey results include expense related to this fee.

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Clearly, the single largest component of cost is labor with both independents and chain pharmacies spending 65% of their overall prescription costs on labor related costs. Chain pharmacies tend to have a larger portion of their labor costs devoted to professional labor compared to independents which tended to have higher "other" labor.

Summary

To summarize, the significant findings from the dispensing cost survey are as follows:

- The median cost to dispense a prescription (weighted by Medicaid prescriptions and inflated to June 30, 1999) is $5.07.
- No association was found between dispensing cost and unit-dose packaging, or other measures of long term care dispensing activity.
- No significant difference was found between the dispensing costs of urban versus rural pharmacies.
- No significant difference was found between the dispensing costs of independent and chain pharmacies.

Table 3.14 Inflation Adjusted Median Dispensing Cost

Period	Midpoint	Inflation Adjusted[A] Median[B] Dispensing Cost
State Fiscal Year 1999	12/31/1998	$5.00
Calendar Year 1999	6/30/1999	**$5.07**
State Fiscal Year 2000	12/31/1999	$5.14
Calendar Year 2000	6/30/2000	$5.22
State Fiscal Year 2001	12/31/2000	$5.29

[A] Inflation factors to June 30, 1999 are based on the CPI, Southern Region, Urban Consumer. Future inflation projections are based on the CPI, All Urban, as published in *Health Care Cost Review, First Quarter 1999* by Standard & Poor's DRI.
[B] Weighted by Medicaid prescription volume.

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KY AWP KRF 03191

EXHIBIT X

A Survey of Dispensing Costs of Pharmaceuticals in the Commonwealth of Kentucky

Prepared for the

Kentucky Department for Medicaid Services

November 2001

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Appendix D. Dispensing Cost Issues for Institutional and Intravenous Pharmacies

Based on previous experience performing dispensing cost studies for the Commonwealth of Kentucky, Myers and Stauffer has become aware of specific concerns relating to the dispensing costs of certain pharmacy specialties. Paramount among the concerns expressed are the dispensing costs of pharmacies that dispense prescriptions to residents of long-term care facilities and pharmacies that dispense intravenous prescriptions. This appendix includes a discussion of issues specific to these pharmacy types.

Institutional Pharmacies

The survey data supported the conclusion that there was not a statistically significant difference in dispensing cost for pharmacies that primarily serviced long-term care facilities versus pharmacies with a more traditional retail structure. It was noteworthy that these institutional pharmacies are operated in a distinctly different manner than a traditional retail pharmacy. One primary consideration is that these pharmacies tended to be very high volume pharmacies. As noted previously in the report, pharmacies with a high prescription volume tend to be more efficient with lower dispensing costs per prescription.

Institutional pharmacies typically provide services not offered in many retail pharmacies. This includes a heavier reliance on delivery services and unit dose dispensing systems. While there may be higher labor and overhead costs associated with the prescription delivery and packaging of unit dose prescriptions, there are also efficiencies associated with the "assembly line" production style of the pharmacy. In contrast, traditional retail pharmacies dispense prescriptions "one at a time" as customers come to the store or as physician calls are received. The greater control over the queuing of prescription requests in an institutional pharmacy creates a significant advantage in terms of scheduling the optimal amount of labor required to perform prescription dispensing functions.

It is also noteworthy that institutional pharmacies often provide other services to nursing homes beyond the typical prescription dispensing services offered in a retail pharmacy. This includes the services of a consultant pharmacist in the long-term care facility as well as medication carts, emergency medication kits and various expanded inventory control procedures. It is also significant to note that these additional services are provided as the result of a direct contractual relationship between the institutional pharmacy and the long-term care facility. Remuneration to the pharmacies for these services is subject to the provisions of

those contractual relationships. Consequently, any cost for these pharmaceutical consulting services would be reported to Kentucky Medicaid via the *nursing facility cost report*. It would therefore be inappropriate to include these consulting services in a survey of the cost of *dispensing* prescription medications. To the extent that such costs could be explicitly identified, the costs associated with consultant pharmacists were not included in the analysis of dispensing cost.

Intravenous Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling intravenous prescriptions. In every dispensing cost survey performed by Myers and Stauffer in which data on the provision of intravenous services was collected, the provision of this service has been associated with higher dispensing costs.

There is some difficulty, however, in determining an average dispensing cost for this type of activity with any degree of stability. Reasons for this include the following:

- There is a significant inconsistency in the way in which pharmacies count the number of intravenous prescriptions dispensing. A pharmacy may mix and deliver many "dispensings" of a daily intravenous solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions. Alternatively, some pharmacies count each daily dispensing individually.
- Many pharmacies that dispense intravenous prescriptions also dispense traditional prescriptions. The task of segregating intravenous and traditional dispensing costs is made difficult by the combined approach to financial and prescription record keeping which make it difficult to isolate costs associated with the dispensing of intravenous prescriptions.
- Based on a review of the literature, there is also considerable variability in the labor and equipment cost inputs into various types of intravenous prescriptions.

Because of these factors, Myers and Stauffer has typically seen extreme variation in the dispensing cost calculated for pharmacies that provide intravenous prescription services. In the current survey, the dispensing cost in the 11 responding pharmacies that dispensed a significant amount of intravenous prescriptions ranged from $5.38 to $36.70. The average (mean) dispensing cost was $9.88, but it should be noted that this average is highly unstable.

One of the reasons it is difficult to determine a stable average dispensing cost for pharmacies that provide intravenous prescriptions is the low number of pharmacies for which data is collected in each survey. To better understand dispensing cost in these pharmacies, Myers and Stauffer performed an analysis of the dispensing cost from data collected on 136 surveys in recent years (inflation adjusted to calendar year 2001). Data for this analysis includes pharmacies in Kentucky, but was also supplemented by data from other states.

Although each of these pharmacies had indicated on the survey forms that they dispensed intravenous prescriptions, most of these pharmacies also dispensed traditional prescriptions as well. After calculating a cost of dispensing for each pharmacy, statistical regression techniques were used in an attempt to isolate the costs associated strictly with the dispensing of intravenous prescriptions.

Although the analysis should not be considered comprehensive, the data suggests that dispensing costs ranging from $15 to $30 per prescription would be considered typical. In addition to variable states of efficiency in these pharmacies, it should be noted that there are various levels of complexity associated with dispensing intravenous prescriptions. A pharmacy's utilization mix of dispensing various types of intravenous prescriptions can have a significant effect on dispensing cost. It is therefore possible that some pharmacies could very well have dispensing costs in excess of $30 per prescription.

Under current policies, the Kentucky Department for Medicaid Services reimburses for intravenous prescriptions in a dispensing fee plus ingredient reimbursement formula similar to traditional retail prescriptions. Although dispensing costs at intravenous pharmacies is well in excess of the current dispensing fee, this reimbursement methodology has been accepted by these pharmacies because the margin on ingredient reimbursement has allowed pharmacies to offset any shortfall from the dispensing fee. In the case of intravenous prescriptions, the typical ingredient reimbursement per prescription is much higher than for traditional retail prescriptions. In fact, the average Medicaid reimbursement per brand-name drug prescription on intravenous drugs was approximately $700.[13] Based on the results of the acquisition cost study performed simultaneously with the dispensing cost survey and the assumption of the Department's current ingredient reimbursement formula of AWP minus 10%, it is estimated that such an average prescription would yield a margin on ingredients of approximately $55. **This margin allows for more than adequate reimbursement of the pharmacy's dispensing cost. So long as the ingredient reimbursement rate remains at AWP minus 10%, the need for the Department to set a separate dispensing fee for intravenous drugs is somewhat mitigated by the margins realized on ingredient reimbursement.**

In recent years, some states have dealt with the issue of intravenous prescription reimbursement rates *in light of reduced ingredient reimbursement.* For example, the state of Utah recently adopted "revised AWPs" for certain products based on the recommendations of the United States Department of Justice and the National Association of Medicaid Fraud Control Units (NAMFCU).[14] Products with these "revised AWPs" were primarily injectable, infusion, and inhalation drugs. Subsequent to the adoption of these prices, intravenous pharmacies alleged that the margins on ingredient reimbursement were no longer sufficient such that they could accept the typical Medicaid dispensing fee. As a result of

[13] Based on an analysis of Kentucky Medicaid drug utilization for calendar year 2000.

[14] "Medicaid's Use of Revised Average Wholesale Price." Department of Health and Human Services, Office of the Inspector General, OEI-03-01-00010, September 2001.

these allegations, the state of Utah created alternate dispensing fees primarily for home infusion pharmacies. The rates were set through a negotiated process and varied based on the perceived level of input costs required to fill the prescription. Table D.1 shows the various dispensing fee categories created by Utah Medicaid.

Table D.1 Utah Medicaid Home Infusion Drug Categories[15]

Dispensing Fee Category	Level of Service	Current Dispensing Fee
Category 'B' or 'C'	Traditional: technician input point-of-sale; pharmacist input; fixed overhead costs	$3.90 or $4.40
Category 'J'	Dispensing fee B or C plus: Labor II factor; clinical monitoring; prefilled syringes/PB; horizontal hood; technician input	$8.90
Category 'K'	Dispensing fee J plus: Clinical monitoring; quality assurance; labor factor	$18.90
Category 'L'	Dispensing fee K plus: Replacement into individual doses such as syringe; recalculations from vial to syringe to bag; large bulk inventory costs; peer review	$22.90
Category 'M'	Dispensing fee L plus: Double gloves; gown; vertical hood; labor factor V; OSHA documentation; special handling; special storage; clean room; hazardous waste	$33.90

The Utah Medicaid home infusion dispensing fee methodology has the advantage that dispensing fee reimbursement is more closely tied to actual dispensing costs. It has the disadvantage that it necessitates increased complexity for the claims adjudication process. It is noteworthy to emphasize that the Utah rates were established based on a negotiated process rather than being based on a survey of actual costs and that the rates were created only because of significant cuts in ingredient reimbursement such that the margin on ingredients was reduced.

[15] Derived from Utah Medicaid State Plan Amendment documents and discussions with Utah Medicaid officials.

EXHIBIT Y

Study of Medi-Cal Pharmacy Reimbursement

Prepared for the

California Department of Health Services

June 2002

Myers and Stauffer LC
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Appendix D. Dispensing Cost Issues for Institutional, Intravenous, Home Infusion and Compounding Pharmacies

Based on previous experience performing dispensing cost studies, Myers and Stauffer has become aware of specific concerns relating to the dispensing costs of certain pharmacy specialties. Paramount among the concerns expressed are the dispensing costs of pharmacies that dispense prescriptions to residents of long-term care facilities, pharmacies that dispense intravenous or home infusion prescriptions, and pharmacies that provide specialty prescription compounding services. This appendix includes a discussion of issues specific to these pharmacy types.

Institutional Pharmacies

The survey data supported the conclusion that there was not a statistically significant difference in dispensing cost for pharmacies that primarily serviced long-term care facilities versus pharmacies with a more traditional retail structure. It was noteworthy that these institutional pharmacies are operated in a distinctly different manner than a traditional retail pharmacy. One primary consideration is that these pharmacies tended to be very high volume pharmacies. As noted previously in the report, pharmacies with a high prescription volume tend to be more efficient with lower dispensing costs per prescription.

Institutional pharmacies typically provide services not offered in many retail pharmacies. This includes a heavier reliance on delivery services and unit dose dispensing systems. While there may be higher labor and overhead costs associated with the prescription delivery and packaging of unit dose prescriptions, there are also efficiencies associated with the "assembly line" production style of the pharmacy. In contrast, traditional retail pharmacies dispense prescriptions "one at a time" as customers come to the store or as physician calls are received. The greater control over the queuing of prescription requests in an institutional pharmacy creates a significant advantage in terms of scheduling the optimal amount of labor required to perform prescription dispensing functions.

It is also noteworthy that institutional pharmacies often provide other services to nursing homes beyond the typical prescription dispensing services offered in a retail pharmacy. This includes the services of a consultant pharmacist in the long-term care facility as well as medication carts, emergency medication kits and various expanded inventory control procedures. It is also significant to note that these additional services are provided as the result of a direct contractual relationship between the institutional pharmacy and the long-term care facility.

Remuneration to the pharmacies for these services is subject to the provisions of those contractual relationships. Consequently, any cost for these pharmaceutical consulting services would be reported to Medi-Cal via the *nursing facility cost report*. It would therefore be inappropriate to include these consulting services in a survey of the cost of *dispensing* prescription medications. To the extent that such costs could be explicitly identified, the costs associated with consultant pharmacists were not included in the analysis of dispensing cost.

Intravenous and Home Infusion Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling intravenous or home infusion prescriptions. In every dispensing cost survey performed by Myers and Stauffer in which data on the provision of intravenous services was collected, the provision of this service has been associated with higher dispensing costs.

There is some difficulty, however, in determining an average dispensing cost for this type of activity with any degree of stability. Reasons for this include the following:

- There is a significant inconsistency in the way in which pharmacies count the number of intravenous prescriptions dispensing. A pharmacy may mix and deliver many "dispensings" of a daily intravenous solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions. Alternatively, some pharmacies count each daily dispensing individually.
- Many pharmacies that dispense intravenous prescriptions also dispense traditional prescriptions. The task of segregating intravenous and traditional dispensing costs is made difficult by the combined approach to financial and prescription record keeping which make it difficult to isolate costs associated with the dispensing of intravenous prescriptions.
- Based on a review of the literature, there is also considerable variability in the labor and equipment cost inputs into various types of intravenous prescriptions.

Because of these factors, Myers and Stauffer has typically seen extreme variation in the dispensing cost calculated for pharmacies that provide intravenous prescription services. In the current survey, the dispensing cost in the 34 responding pharmacies that dispensed a significant amount of intravenous prescriptions ranged from $8.04 to $71.37. The average (mean) dispensing cost was $32.97, but it should be noted that this average is highly unstable (i.e. there was a very high standard deviation).

One of the reasons it is difficult to determine a stable average dispensing cost for pharmacies that provide intravenous prescriptions is the low number of pharmacies for which data is collected in each survey. To better understand dispensing cost in these pharmacies, Myers and Stauffer performed an analysis

of the dispensing cost from data collected on over 100 surveys in recent years (inflation adjusted to calendar year 2002). Data for this analysis includes pharmacies in California, but was also supplemented by data from other states. Although each of these pharmacies had indicated on the survey forms that they dispensed intravenous prescriptions, most of these pharmacies also dispensed traditional prescriptions as well. After calculating a cost of dispensing for each pharmacy, statistical regression techniques were used in an attempt to isolate the costs associated strictly with the dispensing of intravenous prescriptions.

Although the analysis should not be considered comprehensive, the data suggests that dispensing costs ranging from $20 to $40 per intravenous prescription would be considered typical. In addition to variable states of efficiency in these pharmacies, it should be noted that there are various levels of complexity associated with dispensing intravenous prescriptions. A pharmacy's utilization mix of dispensing various types of intravenous prescriptions can have a significant effect on dispensing cost. It is therefore possible that some pharmacies could very well have dispensing costs in excess of $40 per prescription.

Under current policies, the California Department of Health Services reimburses for intravenous prescriptions in a dispensing fee plus ingredient reimbursement formula similar to traditional retail prescriptions (plus some additional compounding, container, and sterility fees). Although dispensing costs at intravenous pharmacies appears to be in excess of the current dispensing fee, this reimbursement methodology has been accepted by these pharmacies because the margin on ingredient reimbursement has allowed pharmacies to offset any shortfall from the dispensing fee. In the case of intravenous prescriptions, the typical ingredient reimbursement per prescription is much higher than for traditional retail prescriptions. The average Medi-Cal reimbursement per single source drug prescription on intravenous drugs is approximately $350.[24] Based on the results of the acquisition cost study performed simultaneously with the dispensing cost survey and the assumption of the Department's current ingredient reimbursement formula of AWP minus 5%, it is estimated that such an average prescription would yield a margin on ingredients of approximately $42. **This margin typically allows for adequate reimbursement of the pharmacy's dispensing cost. So long as the ingredient reimbursement rate remains at AWP minus 5% or any other relatively "high" level, the need for the Department to set a separate dispensing fee for intravenous drugs is somewhat mitigated by the margins realized on ingredient reimbursement.**

In recent years, some states have dealt with the issue of intravenous prescription reimbursement rates *in light of reduced ingredient reimbursement*. For example, the state of Utah recently adopted "revised AWPs" for certain products based on the recommendations of the United States Department of Justice and the

[24] Based on an analysis of California Medi-Cal drug utilization for calendar year 2000.

National Association of Medicaid Fraud Control Units (NAMFCU).[25] Products with these "revised AWPs" were primarily injectable, infusion, and inhalation drugs. Subsequent to the adoption of these prices, intravenous and home infusion pharmacies alleged that the margins on ingredient reimbursement were no longer sufficient such that they could accept the typical Medicaid dispensing fee. As a result of these allegations, the state of Utah created alternate dispensing fees primarily for home infusion pharmacies. The rates were set through a negotiated process and varied based on the perceived level of input costs required to fill the prescription. Table D.1 shows the various dispensing fee categories created by Utah Medicaid.

Table D.1 Utah Medicaid Home Infusion Drug Categories[26]

Dispensing Fee Category	Level of Service	Current Dispensing Fee
Category 'B' or 'C'	Traditional: technician input point-of-sale; pharmacist input; fixed overhead costs	$3.90 or $4.40
Category 'J'	Dispensing fee B or C plus: Labor II factor; clinical monitoring; prefilled syringes/PB; horizontal hood; technician input	$8.90
Category 'K'	Dispensing fee J plus: Clinical monitoring; quality assurance; labor factor	$18.90
Category 'L'	Dispensing fee K plus: Replacement into individual doses such as syringe; recalculations from vial to syringe to bag; large bulk inventory costs; peer review	$22.90
Category 'M'	Dispensing fee L plus: Double gloves; gown; vertical hood; labor factor V; OSHA documentation; special handling; special storage; clean room; hazardous waste	$33.90

The Utah Medicaid home infusion dispensing fee methodology has the advantage that dispensing fee reimbursement is more closely tied to actual

[25] "Medicaid's Use of Revised Average Wholesale Price." Department of Health and Human Services, Office of the Inspector General, OEI-03-01-00010, September 2001.
[26] Derived from Utah Medicaid State Plan Amendment documents and discussions with Utah Medicaid officials.

dispensing costs. It has the disadvantage that it necessitates increased complexity for the claims adjudication process. It is noteworthy to emphasize that the Utah rates were established based on a negotiated process rather than being based on a survey of actual costs and that the rates were created only because of significant cuts in ingredient reimbursement such that the margin on ingredients was reduced.

Compounding Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling compounded prescriptions. Survey data indicated that this practice was associated with statistically significant higher dispensing costs.

The observation that the practice of compounding prescriptions resulted in higher dispensing cost is not surprising given the special labor and equipment needs that are required in this type of pharmacy practice. Preparation time for individual compounded prescriptions, though highly variable depending upon the specific task, tend to be higher than the time associated with filling "traditional" prescriptions in pre-manufactured tablet, capsule, or liquid (etc.) forms. Additionally, the practice of pharmacy compounding does require some additional expensive equipment such as clean rooms for sterile preparation, sensitive scales, and other equipment for making special pharmaceutical dosage forms.

The practice of pharmaceutical compounding has proven to be somewhat controversial given the perception of a fine line between "compounding" and "manufacturing". The U.S. Food and Drug Administration has imposed some limits relating to the practice and advertising of compounding services.

Despite these restrictions, the practice of compounding is appealing to many pharmacists, not only because the practice is perceived to be a return to a historical form of pharmacy practice, but also because compounding is a niche business, which, if successful, can yield high margins. In part, these high margins are due to the promotion of compounding services primarily to cash customers, often in more affluent areas. In some aspects, pharmacy compounding appeals to those seeking "alternative" forms of medical treatments and provides traditional medications in non-traditional forms or in a form free of dyes or other perceived allergens.

Compounding pharmacies have made only minimal attempts to promote wide acceptance of third-party coverage for compounded pharmaceuticals. Primarily, this appears to be related to a desire to avoid reimbursement limitations that could be imposed by a broad acceptance of third party reimbursement plans and fee schedules based primarily on ingredient cost. Compounding pharmacists seem to prefer to maintain the relatively high margins and billing simplicity associated with cash-paying customers. Additionally, because of the potential for billing complexities associated with compounded prescriptions (which sometimes

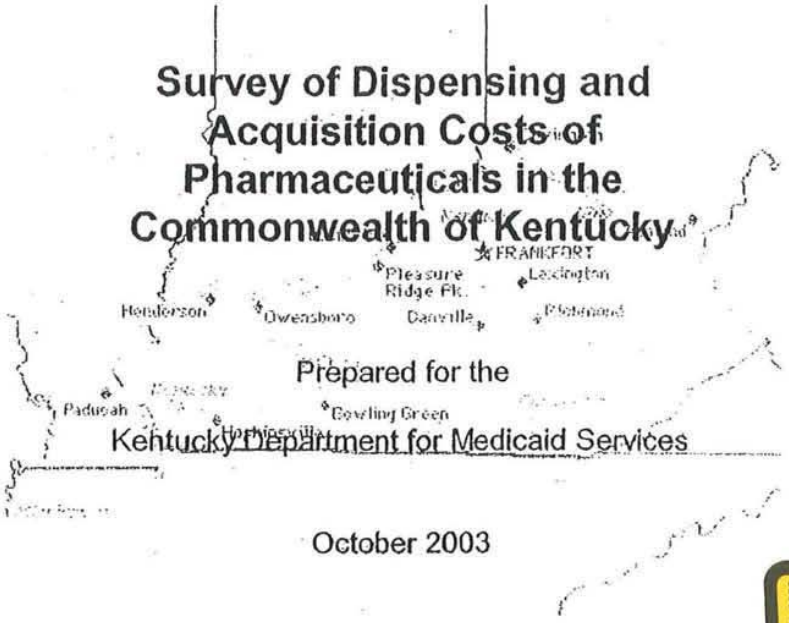
cannot be captured with ease using typical pharmacy claim forms), pharmacies have experienced difficulty in establishing acceptable standards for transmitting suitable claims data that is compatible with the electronic claims processing standards used by most third party payers.

Due to the apparent variability in the cost associated with dispensing compounded prescriptions, a single dispensing fee for compounded prescriptions may be less ideal for matching reimbursement with actual costs incurred. The primary variable that determines dispensing cost incurred by a pharmacy is the amount of professional time required to prepare a particular compounded prescription. A more limited amount of cost variability can be attributed to the special equipment needs of certain preparations. To determine the precise mix of cost inputs into the various types of compounded prescriptions would require some type of time and motion study, the cost of which may be unjustified given the relatively small volume that would be associated with compounded prescription volume.

Given these limitations, a negotiated fee or set of fees is likely to be a preferable means of setting rates for compounding services. Such a fee could be linked to specific types of prescriptions or could be linked to professional time expended with reasonable upper limits. The inclusion of certain compounding services under prior authorization protocols to determine medical necessity may also be appropriate if modifications to dispensing fees for compounding services are considered.

EXHIBIT Z

Survey of Dispensing and Acquisition Costs of Pharmaceuticals in the Commonwealth of Kentucky



Prepared for the

Kentucky Department for Medicaid Services

October 2003

Myers and Stauffer LC

Certified Public Accountants

Analysis and Findings

The dispensing costs for all pharmacies in the sample are summarized in the following tables and paragraphs. Findings for all pharmacies in the sample are presented collectively, and additionally are presented for subsets of the sample based on pharmacy characteristics. There are several statistical measurements that may be used to express the central tendency of a distribution, the most common of which are the average, or mean, and the median (see sidebar). Findings are presented in the forms of means and medians, both raw and weighted.

In many real world settings such as this dispensing cost survey, statistical "outliers" are a common occurrence. These outlier pharmacies have dispensing costs that are not typical of the majority of pharmacies.

Different Measures of Central Tendency:

Unweighted mean: the arithmetic average cost for all pharmacies.

Weighted mean: the average cost of all prescriptions dispensed by pharmacies included in the sample, weighted by prescription volume. The resulting number is the average cost for all prescriptions, rather than the average for all pharmacies as in the unweighted mean. This implies that low volume pharmacies have a smaller impact on the weighted average than high volume pharmacies. This approach, in effect, sums all costs in the sample and divides that sum by the total of all prescriptions in the sample. The weighting factor can be either total prescription volume or Medicaid prescription volume.

Median: the value that divides a set of observations (such as dispensing cost) in half. In the case of this survey, the median is the dispensing cost such that the cost of one half of the pharmacies in the set are less than or equal to the median and the dispensing costs of the other half are greater than or equal to the median.

Weighted Median: This is determined by finding the pharmacy observation that encompasses the middle value prescription. The implication is that one half of the prescriptions were dispensed at a cost of the weighted median or less, and one half were dispensed at the cost of the weighted median or more.

Suppose, for example, that there were 1,000,000 Medicaid prescriptions dispensed by the pharmacies in the sample. If the pharmacies were arrayed in order of dispensing cost, the median weighted by Medicaid volume, is the dispensing cost of the pharmacy that dispensed the middle, or 500,000th prescription.

Medians are sometimes preferred to averages (i.e., the arithmetic mean) in situations where the magnitude of outlier values results in an average that does not represent what is thought of as "average" or normal in the common sense.

For all pharmacies in the sample, findings are presented in Table 3.2.

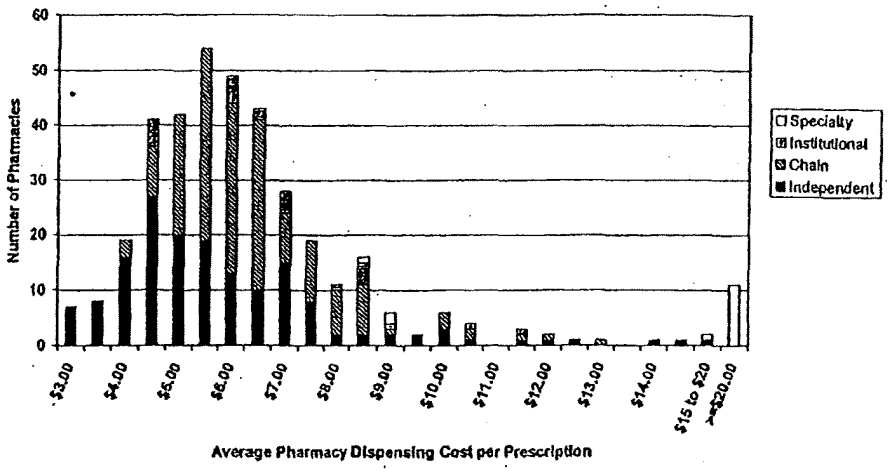
Table 3.2 Cost Per Prescription – All Pharmacies

	Dispensing Cost
Unweighted Average (Mean)	$8.13
Average (Mean) Weighted by Medicaid Volume	$6.05
Unweighted Median	$6.15
Median Weighted by Medicaid Volume	$5.75

(Dispensing Costs have been inflated to the common point of June 30, 2003)

Chart 3.2 is a histogram of the dispensing cost for all pharmacies in the sample. There was a large range between the highest, $122.75, and lowest, $3.02, dispensing cost observed for pharmacies in the sample. The majority of pharmacies (68%), however, had dispensing costs between $4.50 and $7.50.

Chart 3.2 Dispensing Cost by Pharmacy



Several pharmacies included in the cost analysis were identified as specialty pharmacies that dispensed a significant proportion of "non-traditional" prescriptions. The most common characteristic of these specialty pharmacies was the dispensing of intravenous (I.V.) solutions and infusion products, however other specialties included the provision of inhalation therapy drugs, and special biotech injectable preparations. These characteristics, especially the provision of intravenous and infusion products had a significant impact on pharmacy dispensing cost. The analysis revealed significantly higher cost of dispensing associated with the 15 pharmacies in the sample that provided significant levels of these services.

In every pharmacy dispensing study where information on I.V. solution and infusion product dispensing activity has been collected by Myers and Stauffer, such activity has been found to be associated with higher dispensing costs. Discussions with pharmacists providing these services indicate that the activities and costs involved in filling I.V. and infusion prescriptions are significantly different from the costs incurred by the typical retail (or institutional) pharmacy. The reasons for this difference include:

- Costs of special equipment for mixing and storage of I.V. solutions and infusion products.
- Higher direct labor costs because most I.V. prescriptions must be mixed in the pharmacy, whereas the manual activities to fill a non-I.V. prescription are mainly limited to counting pills (or vials, etc.) and printing and affixing the label.
- A pharmacy may mix and deliver many "dispensings" of a daily I.V. or infusion solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions.

This latter factor, in particular, can have a dramatic impact on increasing a pharmacy's apparent cost per prescription.

The difference in dispensing costs that were observed for providers of specialty services compared to those pharmacies that did not offer these specialty services is summarized in Table 3.3.

Table 3.3 Cost Per Prescription - Specialty Versus Other Pharmacies

Type of Pharmacy	Number of Pharmacies	Unweighted Average (Mean) Cost	Standard Deviation
Specialty Pharmacies (e.g., I.V. or infusion)	15	$49.81	$33.85
Other Pharmacies	362	$6.40	$1.88

(Dispensing costs have been inflated to the common point of June 30, 2003)

Pharmacies that dispense specialty prescriptions as a significant part of their business can have dispensing costs far in excess of those found in a traditional pharmacy. Based on the cost findings, it must be concluded that the costs incurred to dispense specialty prescriptions are not representative of the costs incurred by a traditional pharmacy. If the costs of specialty services were to be included in the computation of an average or median dispensing cost that was then used to establish a reimbursement rate, the effect would be to pay approximately 95% of pharmacies an additional allowance for a service they never provided. And, for those pharmacies providing specialty services, the

marginal increase in the fee would be immaterial in relation to the cost of actually dispensing a specialty prescription.[8]

Consequently, many of the analyses that follow exclude the specialty pharmacy providers. In making this exclusion, no representation is made that the cost structure of those pharmacies is not important to understand. However, it is reasonable to address issues relevant to those pharmacies in isolation from the analysis of the cost structure of the vast majority of Kentucky Medicaid pharmacy providers that provide "traditional" pharmacy services. Additional comments regarding pharmacies that dispense I.V. and infusion prescriptions is included later in this chapter.

Table 3.4 restates the measurements noted in Table 3.2 excluding pharmacies that dispensed significant volumes of specialty prescriptions.

Table 3.4 Cost Per Prescription – Excluding Specialty Pharmacies

	Dispensing Cost
Unweighted Average (Mean)	$6.40
Average (Mean) Weighted by Medicaid Volume	$5.86
Unweighted Median	$6.04
Median Weighted by Medicaid Volume	$5.72

(Dispensing costs have been inflated to the common point of June 30, 2003)

Analysis of Pharmacy Characteristics

Responding pharmacies were categorized into various groups of interest and their dispensing costs analyzed to determine statistical significance. These characteristics include:

- Total prescription volume
- Provision of prescription drugs to residents of long-term care facilities
- Chain versus independent pharmacy affiliation
- Urban versus rural pharmacy location
- Type of pharmacy ownership
- Total Medicaid volume
- Medicaid volume as a percent of total volume
- Provision of unit dose dispensing services

[8] Although typical dispensing fees reimburse less than the dispensing costs of I.V. and infusion pharmacies, they are generally able to cover dispensing costs in the margin allowed on ingredient cost reimbursement.

One way to determine the statistical significance of differences in dispensing cost between the pharmacies classified by the above referenced characteristics is through the use of a *t*-test. The sample data may show that a certain group of pharmacies has a sample mean lower or higher than another group. Recognizing that the data only represents a sample, a *t*-test is a statistical technique that seeks to determine if the findings are strong enough that a similar relationship can be expected to exist for the entire population. The *t*-test takes into consideration the sample's size, mean, and underlying variance (as measured by the standard deviation). Although the preference of using a weighted median as a measurement of central tendency was previously explained, a *t*-test requires the comparison of the *unweighted average (mean)* costs.

Exhibit 12 provides additional statistical measures including the standard error of the mean and confidence intervals. Confidence intervals given in Exhibit 12 were calculated using appropriate statistics from the *t* distribution at the 95% confidence level. These intervals are a range estimate for the population mean, and are based upon the sample mean, standard deviation, and sample size. A 95% confidence interval identifies the range which one would expect the mean from *any* sample to fall 95% of the time. It can be inferred that there is a 95% probability that the population mean lies within the range of the confidence interval.

All costs referred to in these analyses have been inflation adjusted to the common point of June 30, 2003.

1) Total Prescription Volume

Pharmacies were classified into meaningful groups based upon their differences in total prescription volume. Dispensing costs were then analyzed based upon these volume classifications.

Table 3.5 Pharmacy Total Annual Prescription Volume

Total Annual Prescription Volume of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost
0 to 49,999	133	$7.53	$2.29
50,000 to 99,999	152	$5.92	$1.24
100,000 and Higher	77	$5.42	$1.00

There is a significant correlation between a pharmacy's total prescription volume and the dispensing cost per prescription. For all categories noted above, differences in the average (mean) dispensing cost were statistically significant (at the 5% level of significance). This result is not surprising because many of the costs associated with any business, included the dispensing of prescriptions, are fixed in nature, and do not vary significantly with increased volume. For stores

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with a higher total prescription volume, these fixed costs are spread over a greater number of prescriptions resulting in lower costs per prescription. (A more detailed analysis of cost variations attributable to total prescription volume using statistical regression techniques is presented later in the report.)

2) Retail Versus Institutional Pharmacies

Pharmacies were classified by whether or not they provided a significant number of prescriptions to residents of long-term care facilities (based on analysis of Medicaid claims history and self-reported measurements on the dispensing cost survey).

Table 3.6 Retail Versus Institutional Pharmacies

Type of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Retail	338	$6.35	$1.87	68,320
Institutional	24	$7.18	$1.94	199,552

The difference in the unweighted sample averages (means) observed here was found to be statistically significant. Institutional pharmacies displayed higher dispensing costs despite the efficiencies associated with having higher total prescription volume. In particular, higher costs associated with specialized equipment and prescription delivery services contributed to the overall higher cost of dispensing. Additional comments regarding institutional pharmacies are included later in this chapter.

3) Chain Versus Independent Pharmacy Affiliation (Retail only)

Of the 338 non-specialty retail pharmacies, 161 were independent pharmacies and 177 were chain pharmacies.

Table 3.7 Chain Versus Independent Pharmacies (Retail Only)

Type of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Independent	161	$6.07	$2.18	60,983
Chain	177	$6.61	$1.49	74,995

The use of a *t*-test indicates that the difference in the unweighted averages (means) is statistically significant (at the 5% level of significance). Despite the higher average total prescription volume in chain pharmacies, their dispensing costs were higher than that observed in independent pharmacies. Higher labor costs for employee pharmacists were a major contributing factor to this phenomenon.

4) Urban Versus Rural Pharmacy Location

Myers and Stauffer used the zip code of each pharmacy to determine if it was located in a Metropolitan Statistical Area (MSA) as used by CMS. Those in an MSA were considered to be urban, and those not in an MSA were considered rural. Pharmacies which were located outside of the commonwealth of Kentucky were excluded from this analysis.

Table 3.8 Urban Versus Rural Pharmacy Location

Location of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Urban	133	$6.70	$1.93	88,386
Rural	214	$6.17	$1.73	64,764

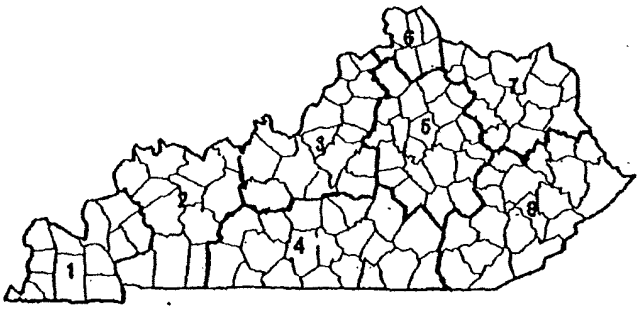
The use of a *t*-test indicates that the difference in the unweighted averages (means) is statistically significant (at the 5% level of significance).

As an additional analysis of pharmacy dispensing cost by location, pharmacies were grouped by Medicaid regions (see Table 3.9 and Chart 3.3).

Table 3.9 Dispensing Costs by Medicaid Region

Location of Pharmacy (Medicaid Region)	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Region 1	17	$6.09	$0.98	64,629
Region 2	46	$6.45	$1.81	68,963
Region 3	80	$6.66	$2.03	83,882
Region 4	46	$6.57	$2.43	60,462
Region 5	70	$6.39	$1.57	79,314
Region 6	12	$6.92	$2.01	67,871
Region 7	24	$6.08	$1.62	71,303
Region 8	52	$5.77	$1.35	72,585

Chart 3.3 Kentucky Medicaid Regions



Several of the differences observed in the regional breakdown of dispensing cost were statistically significant (at the 5% level of significance). Of particular note were the higher costs in regions 3 and 6 and lower costs in region 8. The regional analysis of cost variation appears to confirm the previously noted phenomenon of higher dispensing costs in the urban areas of Kentucky as compared to the rural areas. It is also noted that there is some variation in the average total prescription volume between the various regions.

5) Type of Pharmacy Ownership

Pharmacies reported their ownership as being one of the following:

- Sole proprietor
- Partnership
- Corporation

Table 3.10 Pharmacy Ownership

Ownership Structure of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Sole Proprietor	26	$7.12	$3.53	37,915
Partnership	10	$5.57	$1.32	143,943
Corporation	317	$6.37	$1.67	77,179

The majority, about 88%, of pharmacies had a corporate business structure. The dispensing costs of pharmacies owned as sole proprietorships was significantly higher than other types of pharmacies, however it is also noted that these pharmacies also tended to have lower total prescription volumes.

6) Total Medicaid Volume

Pharmacies were also classified based upon their Medicaid volume. Medicaid volume was supplied to Myers and Stauffer by the Department for Medicaid Services.

Table 3.11 Pharmacy Annual Medicaid Prescription Volume

Annual Medicaid Prescription Volume of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
0 to 4,999	114	$7.41	$2.22	50,614
5,000 to 14,999	145	$6.24	$1.55	66,179
15,000 and Higher	103	$5.53	$1.33	121,511

For the classifications shown, some differences in the average (mean) dispensing cost were found to be statistically significant (at the 5% level of significance). It should be noted, however, that there is a correlation between Medicaid volume and total prescription volume. The relationship noted with regard to Medicaid volume, is a function of total prescription volume rather than Medicaid volume alone.

7) Medicaid Volume as a Percent of Total Volume

A better measure of the effect of a provider's Medicaid volume was to use Medicaid volume as a percent of total volume. To facilitate this analysis, pharmacies were arrayed into meaningful classifications of Medicaid utilization.

Table 3.12 Pharmacy Medicaid Utilization Ratio

Medicaid Prescription Volume as a Percent of Total Volume	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
0.0% to 9.9%	130	$6.72	$1.82	79,495
10.0% to 29.9%	146	$6.34	$1.86	66,635
30.0% and Higher	86	$6.03	$1.95	90,913

The differences in the sample averages (means) shown in Table 3.12 for the high Medicaid utilization and the low Medicaid utilization groups were statistically significant (at the 5% level of significance). There was no trend observed that indicated that higher Medicaid utilization ratios contributed to higher costs of dispensing. In fact, just the opposite trend (i.e., lower dispensing cost associated with higher Medicaid utilization ratios) appeared to be present in the survey data.

8) Provision of Unit Dose Dispensing Services

Pharmacies were classified by whether or not they provided prescription drugs in unit dose packaging.

Table 3.13 Provision of Unit Dose Prescription Services

Type of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Provides Unit Dose Services	62	$6.51	$2.00	119,425
Does Not Provide Unit Dose Services	300	$6.38	$1.86	68,257

The differences in the unweighted sample averages (means) observed here were *not* statistically significant.

9) Combinations of Significant Attributes

Previously, it was noted that all of the following factors were associated with significantly higher dispensing costs (in addition to total prescription volume):

- Institutional pharmacies (as compared to retail pharmacies)
- Chain pharmacies (as compared to independent pharmacies)
- Urban pharmacies (as compared to rural pharmacies)

Table 3.14 presents measurements associated with various combinations of the above pharmacy characteristics.

Table 3.14 Grouped by Institutional vs. Retail Status, Affiliation and Location

Pharmacy Group	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Rural Independent	114	$5.95	$1.99	61,099
Urban Independent	41	$6.41	$2.63	60,048
Rural Chain	89	$6.38	$1.25	70,980
Urban Chain	83	$6.78	$1.55	80,392
Rural Institutional	11	$6.82	$1.97	52,453
Urban Institutional	9	$7.20	$1.40	291,207

Multivariate Analysis

The analyses described above tested for significant differences in cost by analyzing one pharmacy attribute at a time. A more sophisticated method to analyze the impact of pharmacy characteristics upon dispensing cost is to use a stepwise multivariate regression analysis. In such an analysis, it is possible to control for factors known to affect dispensing cost, such as total prescription volume, and determine if other factors have a significant impact on dispensing cost. It is possible for an attribute to be not statistically significant in a *t*-test, but still be shown to have some effect on dispensing cost in a multivariate analysis (or vice versa).

Several analyses were conducted to identify potential correlation between pharmacy dispensing cost and certain pharmacy traits. This approach allows for a more robust analysis than can be achieved by *t*-tests alone to determine the potential influence of pharmacy characteristics on dispensing cost. The traits that were used in the analysis included:

- Prescription sales volume
- Prescription sales ratio
- Type of location
- Unit dose delivery systems
- Delivery service
- Level and percent of Medicaid volume
- Total prescription volume
- Type of ownership
- Pharmacy building ownership
- Geographic location
- Provision of I.V. or infusion services
- Hours open
- Length of operation at location
- Percent of prescriptions dispensed paid by third party payers
- Type of affiliation

The attributes which proved to be the most significant were:

- Total prescription volume
- Provision of I.V. or infusion services

- Provision of delivery service
- Chain affiliation status

The relationship between total prescription volume and dispensing cost was especially pronounced. A linear model to predict total prescription dispensing costs based on prescription volume alone was able to explain over 80% of the variation in dispensing costs in retail pharmacies. Linear regression methods indicate that the regression equation which best describes the relationship of total prescription volume and total dispensing cost in retail pharmacies is:

Total Costs (inflated)= $84,415 + $4.60x (Total Prescription Volume)[9]

Chart 3.4 Relationship Between Total Costs and Total Prescription Volume (Retail Pharmacies)

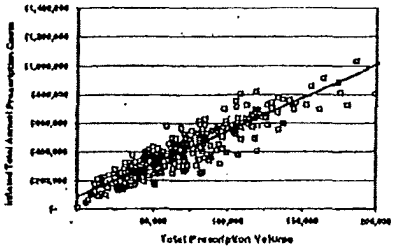
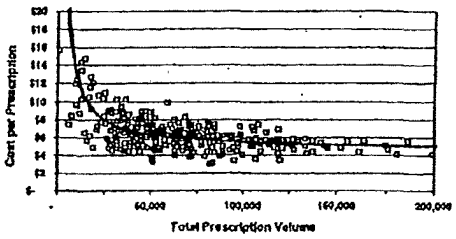


Chart 3.5 Relationship Between Cost per Prescription and Total Prescription Volume (Retail Pharmacies)



In this simplified model of pharmacy dispensing cost, there is the implication that there are fixed costs of $84,415 and variable costs of $4.60 per prescription associated with the "typical" pharmacy. The average total prescription volume for retail pharmacies was approximately 68,300. For such a pharmacy, total prescription costs predicted by the equation are $398,595, or $5.84 per prescription. Clearly, for pharmacies with a high total prescription volume, fixed costs per prescription decrease. Conversely, low volume pharmacies have greater fixed costs per prescription (see Charts 3.4 and 3.5).

No other attribute contributed more than 2% to the predictive power of the linear regression techniques after controlling for the variation of total prescription volume.

[9] Retail pharmacies only. The regression equation shown above was produced using an iterative regression technique that excluded some statistical outliers that would have had the effect of distorting the regression equation.

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Adjustments to Compensate for Survey Bias

Previously it was noted that the total number of pharmacies used in this analysis of dispensing costs was slightly biased toward the inclusion of chain pharmacies. Furthermore, it is noted that the proportion of institutional pharmacies that submitted dispensing cost surveys was higher than the incidence of institutional pharmacies in the total population of Medicaid participating pharmacies. No bias was observed with regard to the urban versus rural location of pharmacies.

This observed survey bias becomes significant given that statistically significant differences in dispensing cost have been observed for these various subsets of pharmacies. This means that the overall average dispensing cost is slightly skewed toward the cost of the pharmacies over-represented in the final analysis sample. To compensate for bias, an adjusted average dispensing cost was calculated, as demonstrated in Table 3.15.

Table 3.15 Calculation of Adjusted Average Dispensing Cost

Pharmacy Type	Stores in Kentucky Medicaid Pharmacy Population	Average Medicaid Prescription Volume	Percent of Total Medicaid Volume	Average Dispensing Cost Observed in Sample (Weighted by Medicaid Volume)	Contribution to Composite Average for all Stores
Independent	692	11,762	53.5%	$5.28	$2.82
Chain	512	8,633	29.1%	$6.11	$1.78
Institutional	53	50,076	17.4%	$6.64	$1.16
Total	1,257	12,103(Avg)	100%	$5.86 (Avg)	$5.76

These calculations yield an estimated average dispensing cost (weighted by Medicaid volume) of $5.76. In theory, had the survey response rate better matched the proportions that these pharmacy types exist in the entire pharmacy provider population, the overall average (mean, weighted by Medicaid volume) dispensing cost would have been approximately $5.76 for all non-specialty pharmacies.

Dispensing Cost Issues for Institutional and Specialty Pharmacies

Based on previous experience performing dispensing cost studies for the Commonwealth of Kentucky, Myers and Stauffer has become aware of specific concerns relating to the dispensing costs of certain pharmacy specialties. Paramount among the concerns expressed are the dispensing costs of pharmacies that dispense prescriptions to residents of long-term care facilities and pharmacies that dispense specialty prescriptions including intravenous and infusion services.

Institutional Pharmacies

Institutional pharmacies are operated in a distinctly different manner than a traditional retail pharmacy. One primary consideration is that these pharmacies tended to be very high volume pharmacies. As noted previously in the report, pharmacies with a high prescription volume tend to be more efficient with lower dispensing costs per prescription. Institutional pharmacies typically provide, services not offered in many retail pharmacies. This includes a heavier reliance on delivery services and unit dose dispensing systems. While there may be higher labor and overhead costs associated with the prescription delivery and packaging of unit dose prescriptions, there are also efficiencies associated with the "assembly line" production style of the pharmacy. In contrast, traditional retail pharmacies dispense prescriptions "one at a time" as customers come to the store or as physician calls are received. The greater control over the queuing of prescription requests in an institutional pharmacy creates a significant advantage in terms of scheduling the optimal amount of labor required to perform prescription dispensing functions.

The survey instrument used in the study of pharmacy dispensing cost was designed such that costs associated with the dispensing of unit dose prescriptions were appropriately captured and included in the dispensing cost analysis. For a variety of reasons relating to patient safety, convenience and ability for returns, dispensing drugs in unit dose packaging is often preferable, or even contractually required, for institutional pharmacies to dispense to nursing facility residents. Unit dose prescriptions can either be purchased in pre-packaged unit dose forms from the drug manufacturer, but most often is packaged into unit dose forms within the pharmacy. The additional cost associated with unit dose packaging (as opposed to traditional packaging) is reflected in building, equipment, supplies and labor expenses.

It is noteworthy that institutional pharmacies often provide other services to nursing homes beyond the typical prescription dispensing services offered in a retail pharmacy. This includes the services of a consultant pharmacist in the long-term care facility as well as medication carts, emergency medication kits and various expanded inventory control procedures. However, these additional services are provided as the result of a direct contractual relationship between the institutional pharmacy and the long-term care facility. Remuneration to the

pharmacies for these services is subject to the provisions of those contractual relationships. Consequently, any cost for these pharmaceutical consulting services would be reported to Kentucky Medicaid via the *nursing facility cost report*. It would therefore be inappropriate to include these consulting services in a survey of the cost of *dispensing* prescription medications. To the extent that such costs could be explicitly identified, the costs associated with consultant pharmacists were not included in the analysis of dispensing cost.

Intravenous and Infusion Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling intravenous or infusion prescriptions. In every dispensing cost survey performed by Myers and Stauffer in which data on the provision of intravenous or infusion services was collected, the provision of this service has been associated with higher dispensing costs.

There is some difficulty, however, in determining an average dispensing cost for this type of activity with any degree of stability. Reasons for this include the following:

- There is a significant inconsistency in the way in which pharmacies count the number of intravenous or infusion prescriptions dispensed. A pharmacy may mix and deliver many "dispensings" of a daily intravenous or infusion solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions. Alternatively, some pharmacies count each daily dispensing individually.
- Many pharmacies that dispense intravenous or infusion prescriptions also dispense traditional prescriptions. The task of segregating intravenous/infusion and traditional dispensing costs is made difficult by the combined approach to financial and prescription record keeping which make it difficult to isolate costs associated with the dispensing of intravenous or infusion prescriptions.
- Based on a review of the literature, there is also considerable variability in the labor and equipment cost inputs into various types of intravenous or infusion prescriptions.

Because of these factors, Myers and Stauffer has typically seen extreme variation in the dispensing cost calculated for pharmacies that provide intravenous or infusion prescription services. In the current survey, the dispensing cost at the 10 responding pharmacies that dispensed a significant amount of intravenous or infusion prescriptions ranged from $8.92 to almost $80. The average (mean) dispensing cost was approximately $43, but it should be noted that this average is highly unstable (standard deviation of approximately $28).

Under current policies, the Kentucky Department for Medicaid Services reimburses for intravenous prescriptions in a dispensing fee plus ingredient reimbursement formula similar to traditional retail prescriptions. Although

dispensing costs at intravenous pharmacies is well in excess of the current dispensing fee, this reimbursement methodology has been accepted by these pharmacies because the margin on ingredient reimbursement has allowed pharmacies to offset any shortfall from the dispensing fee. In the case of intravenous prescriptions, the typical ingredient reimbursement per prescription is much higher than for traditional retail prescriptions. Margins realized on the ingredient portion of reimbursement have traditionally been sufficient to subsidize the difference between dispensing costs and dispensing reimbursement. So long as the ingredient reimbursement rate remains at AWP minus 12%, the need for the Department to set a separate dispensing fee for intravenous drugs is somewhat mitigated by the margins realized on ingredient reimbursement.

Other Dispensing Cost Issues

Components of Cost

The dispensing costs of the surveyed pharmacies were broken down into the various components of overhead and labor related costs. Table 3.16 and Charts 3.6 through 3.8 display the various cost components of the mean costs for pharmacies in the sample. Mean costs shown are weighted by Medicaid prescription volume.

Expenses were classified as follows:

- Owner professional labor – owner's labor costs were subject to constraints in recognition of its special circumstances as previously noted.
- Employee professional labor consists of employee pharmacists. Other labor includes the cost of delivery persons, interns, technicians, clerks and any other employee with time spent performing the prescription function of the pharmacy.
- Building and equipment expense includes depreciation, rent, ownership costs, repairs, utilities and any other expenses related to building and equipment.
- Prescription-specific expense includes pharmacist-related dues and subscriptions, prescription containers and labels, prescription-specific computer expenses, prescription-specific delivery expenses (other than direct labor costs), continuing education, and any other expenses that are unique to the prescription dispensing business.
- Other business expenses consist of all other expenses that were allocated to the prescription dispensing function of the pharmacy including interest, insurance, telephone, and legal and professional fees.